QUARTERLY REPORT
NASA CONTRACT NAS5-31368
FOR MODIS TEAM MEMBER STEVEN W. RUNNING
ASSOC. TEAM MEMBERS E.RAYMOND HUNT, RAMAKRISHNA R. NEMANI
15 APRIL 1995

Activities of Team Member S.W. Running

Publications

Running, S.W., T.R. Loveland, L.L. Pierce, R.R. Nemani, and E.R. Hunt, Jr. 1995. A Remote Sensing Based Vegetation Classification Logic for Global Land Cover Analysis. Remote Sensing Environment. 51:39-48.

Meetings

EOS-SEC Meeting, Chicago Airport, 1/5/95.

GCOS Long-term Climate Monitoring Meeting. Satellite Monitoring of Global Land Cover Changes and Their Impact onClimate. Asheville, NC, 1/9-11/95.

MODLAND Team meeting on the MODIS Landcover product, Boston University, 1/17-19/95.

EOS-SEC Meeting, Chicago Airport, 2/27/95

BAHC Flux Symposium convener, Strategies for Monitoring and Modelling CO2 and Water Vapor Fluxes Over Terrestrial Ecosystems. La Thuile, Italy, 3/5-10/95.

ISPRA Seminar. Biospheric Modeling From Local to Global Scales Using Remote Sensing. Ispra, Italy, 3/13/95.

Shortcourse. GIS & Remote Sensing Applications I. Mediterranean Agronomic Institute of Chania. Crete, Greece, 3/27-31/95.

EGS BAHC Status and prospects of BAHC research into development, testing and validation of 1 dimensional soil vegetation atmosphere (SVAT) models (Invited). Hamburg, Germany, 4/3/95.

Activities of Assoc Team Member E.R. Hunt

Peer-reviewed Publications

Waring, R.H., J.B. Way, E.R. Hunt, Jr., L. Morrisey, R. Oren, J. Ranson, J. Weishampel, and S.E. Franklin. In Press. Remote sensing with radar in ecosystem studies. Bioscience.

Zheng, D., S.W. Running, and E.R. Hunt, Jr. In Press. Prediction of available soil water capacity based on topographic analysis

for regional applications. Landscape Ecology.

Invited Seminars

Oak Ridge National Laboratory. Simulation of Net Carbon Fluxes for Earth System Science. Environmental Sciences Division, Oak Ridge, TN, 2/21/95

Petawawa. The BIOME-BGC Model. Petawawa National Forestry Institute,Ontario, Canada, 3/1/95

Oak Ridge National Laboratory. Matthew G. Rollins. IOME-BGC Model Applied to the FIFE Site. Environmental Sciences Division, Oakridge, TN, 3/7/95

Service
Peer-review panel member for the Department of Energy's Terrestrial Carbon Processes Program, 3/21-22/95, Washington, D.C.

Activities of Assoc. Team Member R.R. Nemani

Revised and submitted LAI/FPAR ATBD.

An improved version of our land cover classification scheme was implemented globally using Pathfinder data for 1989. Results of this effort are being analyzed.

A linked product scheme is designed to produce Land cover, LAI/FPAR and NPP from MODIS data. this scheme is being implemented on AVHRR Pathfinder dataset.

A prototype version of our Look-Up-Table for LAI/FPAR algorithm was produced for global grasslands. Results from our global land cover algorithm at JRC, Ispra (Italy) during 3/95.

Activities of Software Engineer, J. Glassy

Algorithm Theoretical Basis Document (ATBD)
Made a number of changes to the implementation of the MOD15 FPAR, LAI algorithm software implementation in response to ATBD review comments; and re-submitted the ATBD in electronic form to both the SPSO and MODARCH archive sites.

Algorithm Implementation Plan (AIP)
The FPAR, LAI AIP document went through several major drafts; there was added detail on the specific methods and software design, along with amended data flow diagrams. A draft AIP concept document was also completed and submitted electronically to the GSFC modis-xl FTP site, at SDST Jennifer Davis's request, to serve as a potential model document for other MODLAND software developers. An AIP document for the MOD17 PSN, NPP was also begun.

Software Distribution & Build

Several NASA or external source software packages required for use within the MODIS processing context were downloaded and built on our SCF AIX platform: to include the HDF, CDF and netCDF data format access software libraries from NCSA, and the SDP Toolkit version 3.0 software. Minor problems building the SDPTKv.3 software were noted and passed on to the packages administrators. In addition, the map projection transformation software packages, GCTPc, proj4, GMT, and mapgen packages were all retrieved and built on the AIX platform, as well as the NASA AVHRR Pathfinder supplied "goode.c" package. Support software designed and implemented at our SCF to support global data base development activities include the img_cls utility for producing statistical summaries of categorically masked data images, and the geotrast utility for directly binning geographic projection GCM style data sets (e.g. 0.5 deg by 0.5 deg) to the Goode's homolosine rectanglar global map projection used by the NASA AVHRR Pathfinder data sets.

Global data base development activities

Work has progressed rapidly in the development of a series of global scale data products required by use in our algorithms as ancillary data products. These data products will be used in the testing phase of our algorithm software , and are defined at the 8 KM spatial scale registered in the Goode's interrupted homolosine map projection. These include processing the full year sequence of AVHRR Pathfinder data for 1987 into monthly composites, for use in the development of a biophysical Land Cover Characteristics (LCC) map. Other key data layers now in development include global scale coverages of ground cover, phenology, and understory classification. A number of SCF software tools have been developed to support the development of this data base (e.g. see Software section above).

Presentations

Presented an overview of our MODIS algorithm approach before the MODLAND group at the MODLAND Workshop, and participated in a discussion on the implications of our approach for other MODLAND products. At the SCF site, presented a MODIS project overview to IBM Corporation's Jack Brown (head of Federal Systems, IBM Boulder) and Fred Ris (Senior Technical Analyst).

Meetings attended

I participated in the NASA MODIS MODLAND Workshop held at the General Sciences Corporation facility held March 5,6,7 1995. A number of smaller meetings during this workshop were also attended, including a break-out with the BOREAS team led by Forrest Hall, and a meeting with the GSFC DAAC DAO group led by Dr. Paul Chan to present our SCF's needs for a high quality global surface climatology data set. I also attended a separate meetings with the SDST leaders Ed Masuoka and Al Fleig to discuss our evolving SCF Compute Facility Plan, and with Gang Ye (SDST Land Algorithm Transfer & Integration Team Leader) to discuss key implementation details of our MOD15 and MOD17 products.

On Going Activities

Arrival and integration of our next compute facility addition, a high-performance IBM Model 59H workstation, into our MODIS SCF Compute Facility. Software development efforts are targeting the planned Beta-3 delivery for algorithm codes in the timeframe of June 15 to July 15, 1995.